

Instruction Sheet 51-1062

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Because every industry has a leader

Installation Instructions for S&S Air Cleaner for Stock Tillotson, Bendix, and Keihin Carburetors on all OHV H-D's, 1994-up Buells and All 2000-up Single Runner Fuel Injected Models

INTRODUCTION

Installing an S&S air cleaner on a stock carburetor is simple and straightforward. Because this modification increases airflow, larger carburetor jets may be required. Additionally, S&S air cleaners for stock carburetors have no provision for the emissions canister purge valve required in some areas. As a result, installing this product may render the motorcycle illegal for street use in California and other areas with similar emissions standards. It is solely the owner's responsibility to determine the suitability of this product for his use and application.

S&S air cleaner kits for stock carburetors are available for Big Twins, Sportsters and 1994-up carbureted Buells.

Kit #17-0199 fits 1966-1984 Shovelheads and 1966-1985 XL's.

Kit #17-0105 fits 1994-up carbureted Buells.

Kit #17-0108 fits 1984-1989 Big Twins and 1986-1987 Sportsters.

Kit #17-0110 fits 1991-up Sportsters and 1993-up Big Twins.

Kit #17-0101 fits 1999-up Twin Cam models with carburetor or single runner fuel injected models.

Kits are not available for 1989-1992 Big Twins, 1988-1990 XL's or any dual runner fuel injected models.

WARNINGS

● Gasoline is highly flammable, explosive under certain conditions, and the fumes toxic when inhaled. Be sure gasoline petcock is "OFF" before beginning installation, provide adequate ventilation, and disconnect battery ground cable to avoid sparks and accidental engagement of electric starter.

● Improperly mounted carburetor may become detached from motorcycle, resulting in immediate health and fire hazard.

CAUTIONS

● If improperly tightened or loosened by vibration, bolts, screws, etc. located inside air cleaner assembly may fall into engine, causing extensive damage not covered under warranty. S&S recommends applying Loctite 242 or equivalent thread locking compound to threads of all bolts, screws, and nuts located inside air cleaner assembly.

● Mounting bracket bolt of incorrect length may cause parts damage not covered under warranty.

● It is the owner's responsibility to determine if the installation of this air cleaner assembly is in accordance with applicable legal and emissions requirements.

● Crankcase and cylinder head vents must be open and free of restriction. To meet C.A.R.B. and similar standards if applicable, crankcase pressure must be vented into air cleaner assembly, not directly into atmosphere.

● Pressure relief passages in crankcase and/or cylinder heads must not be plugged as gasket failure and oil leakage may result.

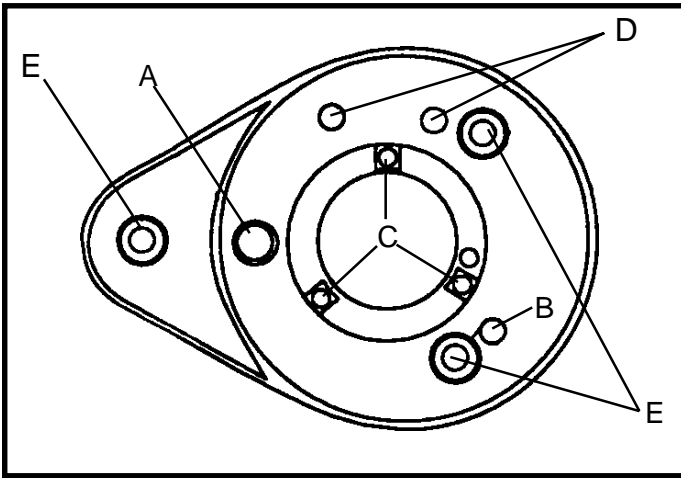


Figure A

NOTES

- Air cleaner assembly must be firmly supported. S&S includes support brackets only with kits for OEM carb or single runner fuel injection. Brackets for other applications are listed in the S&S catalog and may be purchased separately.
- Parts from different year group installed on motorcycle by previous owners may require different support bracket. Adjustable bracket #16-0471 attaches to center case bolt and lower carb-manifold bolt. It is recommended for 1983-'84 Shovels and works on most other models as well.
- Kits may contain wire ties or metal clamps for securing vent hoses depending on application.
- A 36" length of hose is provided for race applications. This hose may be used to route crankcase fumes/oil mist to a 'catch can' or similar device as required and approved by race organizer.

INSTALLATION KIT# 17-0199

1966-1984 Shovels and 1957-1985 Sportsters

(See line drawing on page 6.)

1. Remove existing air cleaner assembly and related hardware, if applicable. Refer to authorized Harley-Davidson Service Manual as needed.
2. Prepare air cleaner backplate.
 - A. 1966-1979 Shovels and 1957-1979 Ironhead Sportsters - Press plugs #50-8313 into holes "D" in backplate. **(See Figure A)**
 - B. 1980-84 Shovels and 1980-1985 Ironhead Sportsters - Apply Teflon tape or thread lubricant to threads of crankcase breather vent elbow fitting #50-8110 and install in hole "A" in backplate. **(See Figure A)**

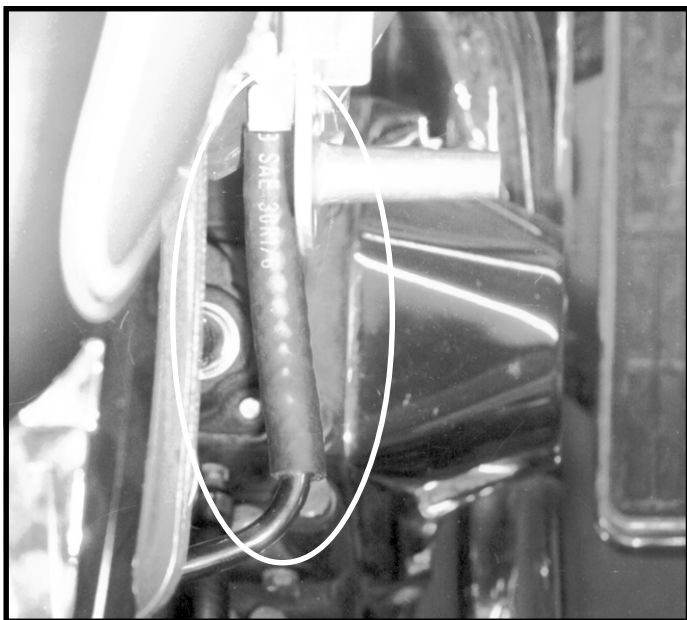
3. Attach mounting bracket to engine. Do not tighten bracket completely at this time.
 - A. 1966-1982 Shovels normally utilize bracket #17-0092, which attaches to bottom of front rocker box and air cleaner backplate.
 - B. Ironhead Sportsters normally utilize bracket #17-0093, which attaches to front intake lifter guide bolt and air cleaner back plate.

NOTE - Backplate screws supplied with this kit have thread locking compound on threads. If screw without thread locking compound is used, a thread locking compound such as Loctite 242 must be applied, and screws properly tightened.

5. Align hole in other end of bracket with hole in backplate. Bracket may require slight bend or shims for correct fit. If gap exists between backplate and mounting bracket, install shims or washers (not supplied) to fill gap. Secure bracket to backplate with 1/4-28 bolt, flatwashers, and Nyloc locknut. Tighten to 10-12 ft-lbs. If bracket attaches to manifold bolt, confirm that adequate thread engagement exists between bolt and carburetor body. If longer bolt is required, insure that bolt is not long enough to bottom out against carburetor
6. Apply a few drops of Loctite 242 (blue) or equivalent to threads, install nuts and lockwashers, and tighten.
7. Tighten all mounting hardware.
8. Install crankcase vent hose to fitting installed in step 2.

WARNING - Vent hose must not contact hot or moving surfaces that could damage it and expose brakes or tires to crankcase oil/air mist. Oil on these components could result in loss of control of motorcycle with death or severe injury to operator and others.

9. Install filter element and air cleaner cover. Secure with three air cleaner cover screws #50-0072 to complete installation.
10. Start motorcycle, inspect for leaks, and test ride. Engine should run smoothly after proper warm-up. Surging or misfire may indicate lean carburetion. If necessary, consult professional mechanic regarding possible need to install larger carburetor jetting.



Picture 1

Crankcase vent hose 1984-92 V².

4. Attach backplate to carb and determine number of shims or washers required to fill gap between backplate and mounting bracket.
5. Insert $\frac{5}{16}$ -18 bolts of appropriate length through backplate, shims, mounting bracket, and lockwasher.
6. Tighten all mounting hardware.
7. Insert vent hose connector #50-8111 into end of existing crankcase vent hose, place S&S crankcase vent hose #17-0113 over other end of connector, and secure with hose clamp. Place second clamp over vent hose and attach end of hose to elbow fitting #50-8110 in backplate. Secure with clamp. **See Picture 1.**
8. Install filter element and air cleaner cover. Secure with three air cleaner cover screws #50-0072 to complete installation.
9. Start motorcycle, inspect for leaks, and test ride. Engine should run smoothly after proper warm-up. Surging or misfire may indicate lean carburetion. If necessary, consult professional mechanic regarding possible need to install correct carburetor jetting.

INSTALLATION KIT# 17-0108

1984-1989 Big Twins and

1986-1987 Sportsters *(Crankcase vented only.)*

(See line drawing on page 6.)

1. Remove existing air cleaner assembly and related hardware, if applicable. Refer to authorized Harley-Davidson Service Manual as needed.
2. Prepare air cleaner backplate.
 - A. 1984-1989 Big Twins - Press plug #50-8312 into hole "B" in backplate. Apply Teflon tape or thread lubricant to threads and screw crankcase breather vent elbow fitting #50-8110 into hole "A." **(See Figure A)**
 - B. 1986 and 1987 Sportsters - Press plug #50-8312 into hole "A" in backplate. Apply Teflon tape or thread lubricant to threads and screw crankcase breather vent elbow fitting, #50-8110 into hole "B." **(See Figure A)**
3. Mount air cleaner support bracket #17-0311 (two required) from air cleaner support holes in cylinder heads with $\frac{5}{16}$ -18 x $1\frac{1}{4}$ " bolts and lockwashers. Do not tighten bracket completely at this time.

NOTE - Backplate screws supplied with this kit have thread locking compound on threads. If screw without thread locking compound is used, a thread locking compound such as Loctite 242 must be applied, and screws properly tightened.

INSTALLATION KIT# 17-0100, 17-0101

1993-up Big Twins,

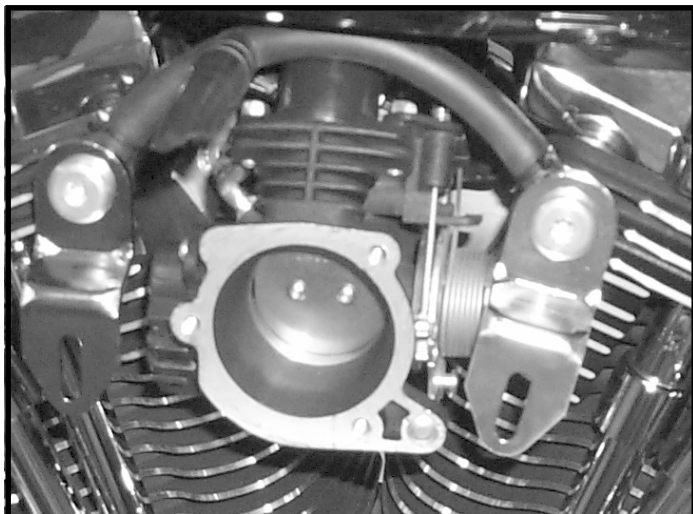
1991-up Sportsters, and

1999-up Carbureted and Single Runner Fuel Injected Twin Cams

(See line drawing on page 7.)

1. Remove existing air cleaner assembly and related hardware including cylinder head breather fittings if applicable. Refer to authorized Harley-Davidson Service Manual as needed.
2. Assemble both head breather bolt assemblies as pictured in line drawing.
3. Screw breather assemblies into breather vent holes in the heads. Do not tighten completely at this time.
4. Install rubber T-hose #17-0339 over cylinder head breather fittings with hose tee toward rear of engine. Hose must not be kinked or otherwise obstructed, and should be trimmed to length as needed. Once proper fit is obtained, secure T-hose to breather fittings with black tie-wraps or metal clamps provided. **(See Picture 2)**
5. Tighten the head breather vent bolts.

NOTE - Use Loctite 262 (Red) on breather fitting to head threads.



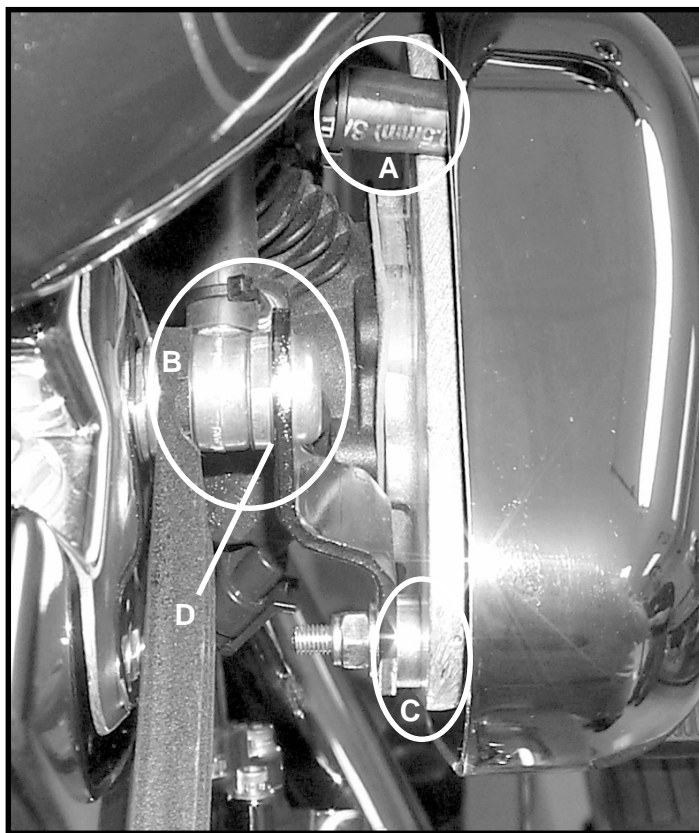
Picture 2

Vent hose, breather fittings and air cleaner mounts installed.

6. Insert $\frac{1}{4}$ -28 bolt through backing plate from filter side. *On Big Twins only- position the .200" thick spacer between the backplate and support bracket.* Next install the bracket, flat washer and the Nyloc nut. Repeat with the other mounting bracket. **(See Picture 3 Item C)**
7. Align the backplate on carburetor. Do not tighten completely at this time.

NOTE - Backplate screws supplied with this kit have thread locking compound on threads. If screw without thread locking compound is used, a thread locking compound such as Loctite 242 must be applied, and screws properly tightened.

8. Align the mounting brackets with the head breather bolts and secure with backplate screw #17-0346. Do not tighten completely at this time.
9. Position mounting brackets.
 - A. On all carbureted models align backing plate and brackets then tighten all mounting hardware.
 - B. On single runner fuel injected models align and tighten all hardware except backplate screw. Fill gap between mounting bracket and breather screw with supplied shims #50-7113, #50-7114, #50-7115 as needed. Shims are only used on fuel injected models. **(See Picture 3 Item B)**



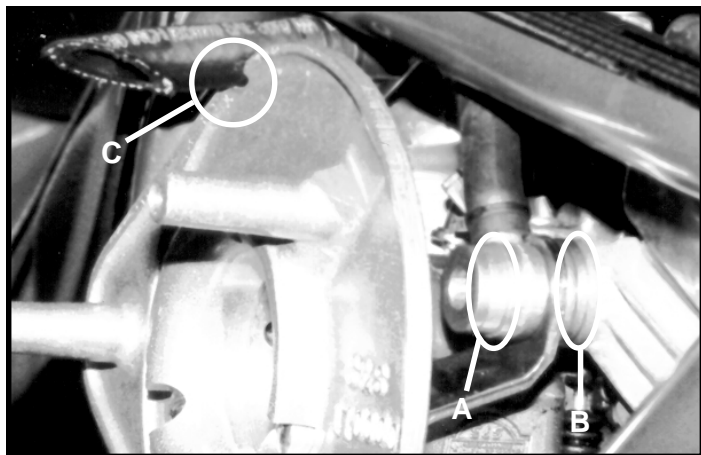
Picture 3

- A** - Breather T-hose in backplate notch.
B - Breather fitting and support bracket.
C - .200" Shim used on 93 and up Big Twins only.
D - Position of shims used on fuel injected models.

10. Place wire tie or metal clamp over tee of T-hose, insert $\frac{1}{2}$ " steel tube #50-8121 part way into tee and tighten clamp. Then slide short length of beveled hose #17-0365 over $\frac{1}{2}$ " steel tube with beveled end out and facing down. Tighten clamp. **See Picture 1.**
11. Apply a few drops of Loctite 242 (blue) or equivalent to threads, install nuts and lockwashers.
12. Tighten all mounting hardware.

NOTE - Torque specifications: $\frac{3}{4}$ " flat vent fittings 15-20 ft-lb with red Loctite (262) Air Cleaner mounting screw 8-12 ft-lb with no Loctite.

13. Install filter element and air cleaner cover. Secure with three air cleaner cover screws #50-0072 to complete installation.
14. Start motorcycle, inspect for leaks, and test ride. Engine should run smoothly after proper warm-up. Surging or misfire may indicate lean carburetion. If necessary, consult professional mechanic regarding possible need to install correct carburetor jetting.



Picture 4

Buell Vent Fitting

- A** - #50-7120 Spacer.
B - .125" Spacer required (minimum).
C - Vent hose in notch in backplate.

INSTALLATION KIT# 17-0105

(See line drawing on page 7.)

1. Remove existing air cleaner assembly and related hardware including cylinder head breather fittings if applicable. Refer to authorized Harley-Davidson Service Manual as needed.

NOTE - Hose barb on rear cylinder head breather fitting must be removed. To remove fitting from cylinder head, a cut-off wheel or similar tool is used to cut barb off. Care must be taken that no metal chips get into the breather fitting. S&S recommends packing fitting with grease. An alternative is to grasp barb with pliers and snap off.

2. Place head vent shim #50-7120 over breather cap screw #17-0338 and roll $\frac{5}{8}$ " O.D. o-ring #50-8032 into large diameter o-ring groove closest to head of breather screw. **(See Picture 4 Item A)**
3. Roll $\frac{1}{2}$ " O.D. o-ring #50-8006 into small diameter o-ring groove of breather screws. Apply thin film of light grease to o-rings.

NOTE - Breather fitting o-rings are easily damaged. It is suggested that replacements be obtained prior to removing breather fittings in future.

4. Repeat for other breather screw.
5. Pass breather screws through breather fittings #17-0337 and OEM support bracket. Do not tighten at this time.

NOTE - At least one .125" shim must be installed between breather fitting and cylinder head. Otherwise breather screw may bottom out in cylinder head, resulting in oil leak and possible damage to head or screw. **(See Picture 4 Item B)**

6. Install backplate on carb.

NOTE - Backplate screws supplied with this kit have thread locking compound on threads. If screw without thread locking compound is used, a thread locking compound such as Loctite 242 must be applied, and screws properly tightened.

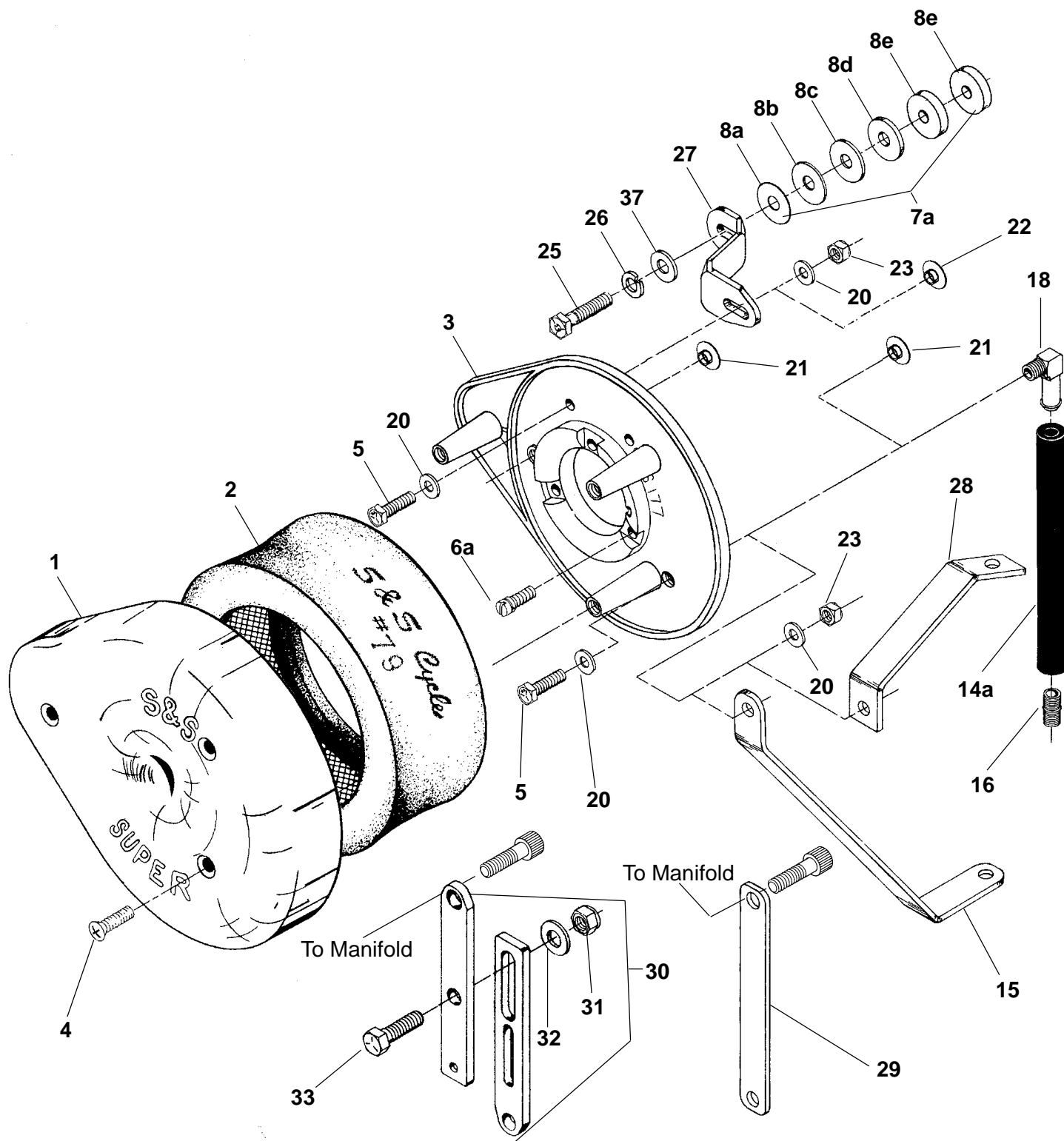
7. Remove backplate and breather screw assemblies, then install shims and reinstall breather screw assemblies. Do not tighten at this time.
8. Align breather fitting outlets to permit installation of T-hose.
9. Install rubber T-hose #17-0339 over cylinder head breather fittings with hose tee toward rear of engine. Hose must not be kinked or otherwise obstructed, and should be trimmed to length as needed to align tee with backplate cut out. Once proper fit is obtained, secure T-hose to breather fittings with black tie-wraps or clamps provided. **(See Picture 4 Item C)**
12. Place wire tie or metal clamp over tee of T-hose, insert $\frac{1}{2}$ " steel tube #50-8121 part way into tee and tighten clamp. Then slide short length of beveled hose #17-0365 over $\frac{1}{2}$ " steel tube with beveled end out and facing down, and tighten clamp. **(See Picture 1)**
13. Apply a few drops of Loctite 242 (blue) or equivalent to threads, install nuts and lockwashers.
14. Tighten all mounting hardware.
15. Install filter element and air cleaner cover. Secure with three air cleaner cover screws #50-0072 to complete installation.

WARNING - Vent hose must not contact hot or moving surfaces that could damage it and expose brakes or tires to crankcase oil/air mist. Oil on these components could result in loss of control of motorcycle with death or severe injury to operator and others.

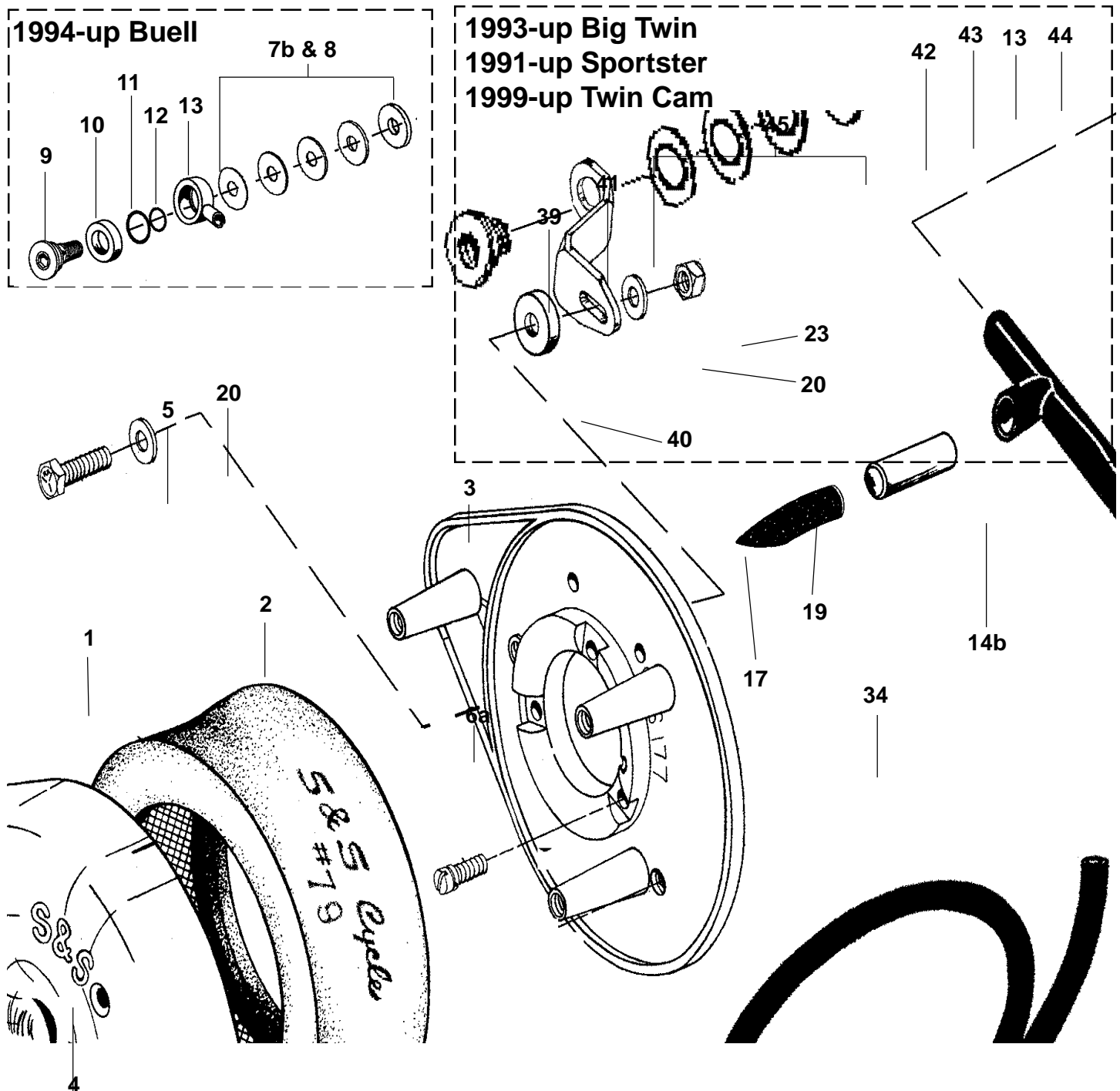
16. Start motorcycle, inspect for leaks, and test ride. Engine should run smoothly after proper warm-up. Surging or misfire may indicate lean carburetion. If necessary, consult professional mechanic regarding possible need to install correct carburetor jetting.

1966-1984 Shovel Big Twin and
1957-85 Sportster with stock carburetor Part #17-0199

1984-89 Big Twin, 1986-87 Sportster with stock carburetor. Part #17-0108



- 1993-up Big Twin and
1991-up Sportster with stock carburetor Part #17-0100
- 1994-up Buell with stock carburetor Part #17-0105
- 1999-up Twin Cam with stock carburetor or single runner fuel injection
..... Part #17-0101



S&S Air Cleaner Assemblies for Stock Carburetors

Parts and Mounting Hardware

1. Air cleaner cover Part #17-0078
2. Element Part #17-0079
3. Backplate
 - 1966-'89 Big Twin, 1966-'87 Sportsters ... Part #17-0180
 - 1993-up Big Twin Part #17-0001
 - 1991-up Sportster Part #17-0002
 - 1994-up Buell Part #17-0003
4. Cover screw Part #50-0072
5. Screw, HHC ¼-28 x ⅞" Part #50-0074
6. Backplate screw,
 - a. SLTD FH w/lockwasher ¼-20 x ¾" Part #50-0073
 - b. SLTD FH w/lockwasher ¼-20 x 1" Part #50-0076
7. Shim kit
 - a. BT 1966-1989 & XL 1966-1987
(includes 2 ea. ⅝" x .018", ⅝" x .030", ⅝" x .048",
⅝" x .105" & 4 ea. ⅝" x .125") Part #17-0314
 - b. BT 1993-up, XL 1991-up, Buell 1994-up
(includes 2 ea. ½" x .018", ½" x .030", ½" x .048",
½" x .105", and 4 ea. ½" x .125") Part #17-0464
8. Shim
 - BT 1966-1989 & XL 1966-1987
 - a. ⅝" x .018" Part #50-7038
 - b. ⅝" x .030" Part #50-7039
 - c. ⅝" x .048" Part #50-7040
 - d. ⅝" x .105" Part #50-7041
 - e. ⅝" x .125" Part #50-7042
 - BT 1993-up, XL 1991-up, Buell 1994-up
 - f. ½" x .018" Part #50-7085
 - g. ½" x .030" Part #50-7086
 - h. ½" x .048" Part #50-7087
 - i. ½" x .105" Part #50-7089
 - j. ½" x .125" Part #50-7090
9. Breather capscrew Part #17-0338
10. Shim, head vent .620" I.D. x .800" O.D. x .185"
..... Part #50-7120
11. Breather screw o-ring ⅝" O.D. Part #50-8032
12. Breather screw o-ring ½" O.D. Part #50-8006
13. Vent fitting
 - BT 1993-up & XL 1991-up Part #17-0337
14. Crankcase breather vent hose
 - a. BT 1984-1992 & XL 1986-1990 Part #17-0113
 - b. BT 1993-up & XL 1991-up Part #17-0339
15. Air cleaner support bracket 1957-'85 XL ... Part #17-0093
16. Vent hose connector nipple Part #50-8111
17. Vent hose, 1991-up XL Part #17-0365
18. 90° Elbow fitting Part #50-8110
19. Hose fitting Part #50-8121
20. Flatwasher, ¼" Part #50-7021
21. Backplate plug, black plastic Part #50-8312
22. Plug, press-in clear plastic Part #50-8313
23. Support bracket locknut ¼-28 x ⅞" Part #50-5010
24. Air cleaner support bracket
 - 1984-'91 V² BT & 1986-'90 V² XL Part #17-0312
25. Support bracket screw, ⅝"-18 x 1¼" Part #50-0110
26. Lockwasher ⅝" Part #50-7032
27. Support bracket, AC/head V², stock Part #17-0311
28. Air cleaner support bracket 1966-'82 BT ... Part #17-0092
29. Support bracket - Panhead Part #16-0096
30. Support bracket - 1983-'84 Shovels Part #16-0471
31. Lock nut, ⅝" x 18 Part #50-5021
32. Flat washer, ⅝" x ⅞" Part #50-7034
33. Support bracket screw ⅝"-18 x 1" Part #50-0108
34. Rubber tubing ⅜" x ⅝" x 1' Part #19-0169
35. Wire tie (Not shown) Part #50-8003
36. Hardware kit (Not shown)
 - Air cleaner mounting, 1994-up Buell Part #17-0050
 - Air cleaner mounting, E/G 1994-up Buell .. Part #17-0051
 - Air cleaner mounting, V² Part #17-0244
 - Air cleaner mounting, 1993-up BT Part #17-0052
37. Washer, flat ⅝" x ⅞" x .146" Part #50-7053
38. Carb support bracket
 - V² w/CV carb, 1994-up Buell Part #17-0309
39. Screw, air cleaner backplate support Part #17-0346
40. Shim ¼" x ¾" x .200" Part #17-7024
41. Carb support bracket Part #17-0308
42. Vent fitting
 - V² Part #17-0347
 - Twin Cam Part #17-0345
43. Washer, silicone Part #50-7055
44. Washer, silicone
 - V² Part #50-7055
 - Twin Cam Part #50-7054
45. Shims (each) (Fuel Injected only)
 - .620" x .880" x .025" Part #50-7113
 - .620" x .880" x .050" Part #50-7114
 - .620" x .880" x .075" Part #50-7115